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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,765	08/06/2003	Byung-Jik Kim	P23325	6835
7055	7590	06/01/2006	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			GILLAN, RYAN P	
			ART UNIT	PAPER NUMBER
			3746	

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/634,765		KIM ET AL.	
	Examiner		Art Unit	
	Ryan P. Gillan		3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/16/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, are rejected under 35 U.S.C. 102(b) as being anticipated by Pettitt (5,163,819). Pettit teaches a reciprocating compressor comprising: a piston (22) which reciprocates in a compression space (14) of a cylinder (20) by being engaged with a reciprocating motor (col. 5 lines 20-27) and which has a suction path (46) connected to the compression space of the cylinder; a suction valve (48) mounted at an end surface portion of the piston (clearly seen in figure 2) to control gas suction by opening and closing the suction path of the piston; a discharging valve (54) assembly mounted at a discharge side (56) of the cylinder to control gas discharge by opening and closing the compression space; and an adhesion preventer (47) positioned at a contact portion between the end portion surface of the piston and the suction valve to minimize adhesion of the piston and the suction valve due to oil by reducing a contact area between the piston and the suction valve. The adhesion preventer is provided at an end portion surface of the piston and that suction valve and comprises a groove (clearly seen in figure 2).

Claim Rejections - 35 USC § 103

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettitt in view of Kikuchi et al. (5,380,176). Pettitt teaches the claim limitations as shown above, but fail to teach the adhesion preventer having a groove (241b) with a depth of about 20-200 micrometers (col. 6 lines 31-35) and an oil back flow preventing protrusion (241c) is provided at the end portion of the suction path located at a front surface of the piston.

5. Kikuchi et al. teach an adhesion preventer having a groove (241b) with a depth of about 20-200 micrometers (col. 6 lines 31-35) and an oil back flow preventing protrusion (241c) is provided at the end portion of the suction path located at a front surface of the piston. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the suction valve assembly taught by Pettitt to incorporate a depth of the said groove to be 150 micrometers and also to include a protrusion provided at the end portion of the suction path as a means of eliminating noise due to resonant vibration, as taught by Kikuchi et al. (col. 6 lines 31-34).

6. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettitt in view of Kikuchi et al. and Seo (6,089,836). The combination of Pettitt and Kikuchi et al. teach, as cited above, a reciprocating compressor comprising: a piston (22) which reciprocates in a compression space (14) of a cylinder (20) by being

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engaged with a reciprocating motor (col. 5 lines 20-27) and which has a suction path (46) connected to the compression space of the cylinder; a suction valve (48) mounted at an end surface portion of the piston (clearly seen in figure 2) to control gas suction by opening and closing the suction path of the piston; a discharging valve (54) assembly mounted at a discharge side (56) of the cylinder to control gas discharge by opening and closing the compression space; and an adhesion preventer (47) positioned at a contact portion between the end portion surface of the piston and the suction valve to minimize adhesion of the piston and the suction valve due to oil by reducing a contact area between the piston and the suction valve; the adhesion preventer is provided at an end portion surface of the piston and that suction valve and comprises a groove (clearly seen in figure 2); adhesion preventer having a groove (241b) with a depth of about 20-200 micrometers (col. 6 lines 31-35) and an oil back flow preventing protrusion (241c) is provided at the end portion of the suction path located at a front surface of the piston.

7. The combination of Pettitt and Kikuchi et al. fail to teach the piston engaged with a reciprocating motor. Seo teaches a valved piston (17) engaged with a reciprocating motor (16). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the compressor device taught by Seo with the compressor device taught by Pettitt and Kikuchi et al. as a means of improving the efficiency of operation, increased reliability, reduce stress on parts and lower noise levels of the compressor porting system (Pettitt, col. 2 lines 46-51).

Response to Arguments

8. Applicant's arguments filed 3/16/06 have been fully considered but they are not persuasive. The applicant argues that due to the gap between suction port 46 and disk 48, that gas flows freely through suction port 46. On the contrary, although the gap may fill with gas it cannot flow freely until there is a change in pressure and the disk opens a passage way for the release of the gas as clearly seen in figure 1.

9. The applicant also argues that Pettitt is a rotary compressor, which is also untrue. As can be clearly seen in figure 1, the compression occurs through the reciprocation of the piston in the cylinder and only the motor is rotary.

10. Applicant's arguments with respect to claims 8-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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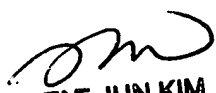

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan P. Gillan whose telephone number is 571-272-8381. The examiner can normally be reached on 8:00 am - 4:30 pm; Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe can be reached on 571-272-4444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RPG



TAE JUN KIM
PRIMARY EXAMINER